



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,795	06/11/2007	Manfred Lenhart	HER07 P-118	1502
28101 7590 02/16/2011 VAN DYKE, GARDNER, LINN & BURKHART, LLP SUITE 207 2851 CHARLEVOIX DRIVE, S.E. GRAND RAPIDS, MI 49546			EXAMINER STIMPERT, PHIL/PEARL	
			ART UNIT 3746	PAPER NUMBER
			MAIL DATE 02/16/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/590,795

Applicant(s)

LENHART, MANFRED

Examiner

Philip Stimpert

Art Unit

3746

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 38-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/11/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on 22 November 2010 is acknowledged. The traversal is on the ground(s) that a process and apparatus for carrying out the process should not be found to lack unity of invention. This argument is persuasive and the requirement is withdrawn.

Drawings

2. The drawings are objected to because of the y-axis labels in Fig. 5. "OT" and "UT" are never defined in the specification, and have no accepted definition in the art of which the examiner is aware. Clarification in the specification or corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

3. The drawings are further objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the bearings of claim 41, the common flap of claim 54, the crank and sling drives of claims 56 and 57, and the control unit and position indicators of claim 59 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 38-59, 61-65, 66, 68, 72 and 73 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Regarding claim 38, the claim recites "with the feedline associated with it." It is unclear to what element "it" refers, since normal usage would indicate that it refers to "the feeding cylinders," but those are recited in the plural.
7. Regarding claim 40, the claim recites "a prefilling container," which was previously positively recited in claim 38. This renders the claim indefinite, as it is unclear whether a new prefilling container is being recited.

8. Regarding claim 46, there is insufficient antecedent basis for the limitation of "said rotating axis" in the claim.
9. Regarding claim 59, there is insufficient antecedent basis for the limitations of "the feed pistons" and "the feeding pistons."
10. Regarding claim 61, there is insufficient antecedent basis for "the suction stroke."
11. Regarding claim 62, there is insufficient antecedent basis for the limitations of "the opening of each feed cylinder," "the pump stroke" and "the blocking section."
12. Regarding claim 63, the antecedent basis of the first and second synchronous phases is unclear. In particular, it is unclear whether these phases relate to the synchronous travel phase recited in claim 60. Also, the claim recites "a piston," which was previously positively recited in claim 60.
13. Regarding claim 64, the claim recites "driving both feeding pistons." However, this disagrees in scope with the "at least two feeding cylinders with feeding pistons" that were previously recited. It is therefore unclear which of the "at least two" feeding pistons are limited by claim 64.
14. Regarding claim 65, the claim again positively recites "a feeding piston."
15. Regarding claim 66, there is insufficient antecedent basis for the limitations of "the suction stroke" and "the pumping stroke."
16. Regarding claim 68, the antecedent basis of the limitation "the synchronous phases" is unclear, as only a single "synchronous travel phase" was previously recited.
17. Regarding claim 72, there is insufficient antecedent basis for the limitation of "the operational pauses" in the claim.

18. Regarding claim 73, there is insufficient antecedent basis for the limitation of "the inlet position."

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 38-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,345,883 to Westerlund et al. (Westerlund hereinafter) in view of US Patent 3,266,435 to Smith (Smith) and US Patent 2,369,566 to Hall (Hall).

21. Regarding claim 38, Westerlund teaches a multiple cylinder thick materials pump for pumping concrete, comprising two feeding cylinders (12, 12') for feeding thick material from a prefilling container (6) into a feed line (16) and a shift valve (18, 18', 20, 20'). Westerlund teaches that the shift valve includes two rotating valve slides (18, 18') each including a straight transfer section (40, 40') between a respective one of the cylinders and the feed line (16). Westerlund teaches that, as a part of this pump, each pumping cylinder and valve unit is pivoted as a unit in order to provide the valving function. As such, Westerlund does not teach that each rotating slide includes a blocking section and a transfer section. Smith teaches another thick materials pump in which a rotating valve (130) is provided in each of two cylinders to selectively establish connection between the cylinder and either the inlet (32) or the common outlet (52). One of ordinary skill in the art would readily appreciate that allowing the cylinders to

remain stationary rather than pivoting the entire assembly for each stroke would result in decreased complexity and energy use. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the pivoting cylinder and valve structure of Westerlund with a stationary cylinder and individual valve structure as taught by Smith.

22. However, neither Westerlund nor Smith teach a rotating valve slide having both a straight transfer section and a blocking section as claimed. Hall teaches a valve for a positive displacement device, in particular a combustion engine, in which a valve (20) is rotated to sequentially provide communication between a cylinder (10) and either an intake (29) or an outlet (19). As such, Hall teaches an alternate valve structure for providing the same functionality as either Westerlund or Smith. Where a claimed improvement on a device or apparatus is no more than "the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement," the claim is unpatentable under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)). Accordingly Applicant claims a combination that only unites old elements with no change in the respective functions of those old elements, and the combination of those elements yields predictable results; absent evidence that the modifications necessary to effect the combination of elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d at 1518-19 (BPAI, 2007) (citing *KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396.

Accordingly, since the applicant[s] have submitted no persuasive evidence that the combination of the above elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a) because it is no more than the predictable use of prior art elements according to their established functions resulting in the simple substitution of one known element for another. In this case, the valve structure of Hall, suitably dimensioned, could be utilized in each of the cylinders of Westerlund by known methods of pump and valve construction, and would provide every expectation of success, since the valve is simply another mechanical means of routing fluid flows. Thus provided, each valve includes a rotating slide with a transfer section (19) and a blocking section (the plate into which the aperture for 19 is cut).

23. Regarding claim 39, Hall teaches providing a guidance structure (25, 26) for the rotating slides, having openings (29 and surrounding 20) for passing through the material flows.

24. Regarding claim 40, as noted above, Westerlund and Smith both teach prefilling containers (6 and 32 respectively), and Smith teaches an inlet opening (18) in each slide, and fixedly mounting the guidance structure to the inlet (i.e. the prefilling container in the combination) so that, in the combination, the rotating slides are constantly in contact with the thick material (as are the valves of Smith in particular).

25. Regarding claim 41, as shown by Hall, the guidance structure is essentially a frame and includes a bearing (25).

26. Regarding claim 42, as shown by Hall, the rotating slides can be rotated around an axis to a transfer position (in which 17 aligns with 19), a blocking position (in which 17 aligns with neither 18 nor 19), and an inlet position (in which 17 aligns with 18).
27. Regarding claim 43, as contemplated, the combination envisions substituting a substantially identical valve as taught by Hall into each of the cylinders of Westerlund.
28. Regarding claim 44, the rotating slides as taught by Hall are drum-shaped and held on both sides (13, 26) so they can rotate.
29. Regarding claim 45, the rotating slides as taught by Hall can be divided into a transfer section (19), an inlet section (18), and a blocking section (therebetween).
30. Regarding claim 46, Hall teaches that the inlet section (18) comprises a radially opening inlet (facing 29) and a exhaust (facing 17) parallel to the rotating axis of the slide.
31. Regarding claim 47, the curve of the inlet section (18) as taught by Hall comprises a deflection device.
32. Regarding claim 48, as taught by Hall, the blocking sections are provided between the transfer (19) and inlet (18) sections.
33. Regarding claim 49, as taught by Hall, the sections are all located on a joint partial circle (see Fig. 3) with distances equally spaced relative to each other (at least for particular portions of the blocking sections).
34. Regarding claim 50, as taught by Hall, the sections of the rotating slides are provided as single modules which may be disconnected at least by cutting the slide to

separate the elements. Further, it is generally considered obvious to make elements such as those separable. See MPEP §2144.04, V, C.

35. Regarding claim 51, as taught by Hall, the rotating slides can be considered to constitute 6 sections, i.e. longitudinal halves of each of the inlet (18) and outlet (19) sections, and the acute and obtuse blocking sections relative to the inlet and outlet sections.

36. Regarding claim 52, as taught by Hall, the rotating slides are divided into two blocking sections (see Fig. 3) and an inlet and an outlet section.

37. Regarding claims 53-54, Westerlund teaches that the entire hopper end comprises a flap which can be opened (see Fig. 6) in such a manner as would allow for the removal of thick material from the transfer section of the rotating slides.

38. Regarding claim 55, as provided by the combination, the rotating slides are independently drivable and positionable as are the pivoting valves of Westerlund.

39. Regarding claim 56, Westerlund teaches crank drives (19) for positioning the valves, which could continue to provide the rotation and positioning in the combination.

40. Regarding claim 57, Hall teaches that "[r]otation can be imparted to the hub member in any desired manner," including such conventional drive means as the claimed sling drive.

41. Regarding claim 58, as taught by Westerlund, the transfer sections (40) are cylindrical tubes of the same diameter as the feeding cylinders. In adapting the valve structure of Hall for the pump of Westerlund, one of ordinary skill in the art could be expected to use that dimension.

42. Regarding claim 59, Westerlund teaches providing a control unit (col. 9, ln. 1) and position indicators (46, 48, 50, 51), and providing momentary positions of the pistons and rotating slides therefrom to the control unit to thereby drive the feeding pistons according to a predetermined, cyclical time/distance pattern.

43. Regarding claim 60, Westerlund teaches a process for operating the thick materials pump including providing two cylinders (12, 12'), two independently controllable rotating slides (18, 18') with transfer sections (40, 40') for connecting the cylinders to a feed line (16), including a synchronous travel phase of the pistons (col. 7, ln. 12-15). According to the combination, the cylinders are not pivoted, as taught by Smith, and include rotating slides as taught by Hall, which, when located in transfer positions, connect the cylinders to the feed line for simultaneous pumping.

44. Regarding claim 61, Westerlund teaches moving both of the pistons at half speed during the synchronous phase (col. 15, ln. 6-13) so as to maintain the flow rate substantially constant (i.e. equal to the rate provided by one piston alone).

45. Regarding claim 62, Westerlund teaches that the valve position (i.e. the pump position in the unmodified pump of Westerlund) must be changed before the beginning of the discharge stroke of the pump. In the combination, this is accomplished by rotating the valve of Hall from the inlet position to the outlet, which necessarily involves passing through a blocking section.

46. Regarding claim 63, Westerlund teaches that each pump stroke includes a precompression phase (precompression is being read as prior to compression) in which

the valve is rotated, a first synchronous phase (col. 7, ln. 12-15), a pump phase, and a second synchronous phase (col. 15, ln. 40-58).

47. Regarding claim 64, Westerlund teaches driving both feeding pistons at the same speed (i.e. half speed) during the synchronous phase (col. 7, ln. 12-15).

48. Regarding claim 65, Westerlund teaches a transition phase in which the valve position of the combination is shifted, in which a piston is stopped (at least for safety reasons, see col. 15, ln. 59-68) during the traverse of the other piston.

49. Regarding claim 66, inasmuch as Westerlund teaches that the entire suction stroke of one piston, including valve state switching, is accomplished during a pumping stroke of the other piston, the suction stroke must perforce be faster than the pumping stroke.

50. Regarding claim 67, as taught by Westerlund, the periods of piston standstill for valve switching on either end of the suction stroke constitute starting and stopping ramps with reduced speed.

51. Regarding claims 68-71, as modified, Westerlund teaches that the valve slide is either stopped or slowed to a stop for the synchronous phases (the valve is stopped in the transfer position), a precompression phase (the valve is slowed to a stop for the discharge stroke), a transition phase (for instance, during the transition from full to half-speed pumping as the other cylinder comes online, the valve slide remains stopped in the transfer position), and during a suction phase (the valve is stopped in the inlet position).

52. Regarding claims 72 and 73, Westerlund teaches positioning the slides in an operating position in the operational pauses of the pump, and allowing the removal of thick material and insertion of a cleaning body. The step of allowing is accomplished by placing the pump in the position shown in Fig. 6, in which the components are accessible. Further, this step of opening the pump for component access would only be undertaken when the pump is not in operation, i.e. in an operational pause of the pump. Finally, the "operating positions" of the rotating slides are not in any way limited, beyond their ability to provide the allowing functionality, and as such are satisfied by whatever positions, including inlet positions, are held by the rotating slides of Hall when the pump of Westerlund is opened.

53. Regarding claim 74, one of ordinary skill in the art would expect at least a basic on/off switch of some type to be provided in the pump of Westerlund. While maintained in an off position, this would provide a safety device preventing starting of the rotating slides, and one of ordinary skill would plainly expect the pump to be deactivated during any maintenance cycle involving opening the pump as shown in Fig. 6.

Conclusion

54. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,244,838 to Couillard et al. teaches phasing two pistons to obtain uniform discharge flow (col. 3, ln. 33-35, see Fig. 5). US Patent 5,957,675 to Buehrer et al. teaches a flap (70) for removing concrete from a valve chamber. US Patent 6,113,368 to Hofmann teaches precompression of a pumped fluid (see abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

/P. S./
Examiner, Art Unit 3746
9 February 2011